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JULY 1, 1942
SUPERSEDING
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July 2, 1934

NAVY DEPARTMENT SPECIFICATION

CEMENT, RUBBER (AIRCRAFT USE)

A. APPLICABLE SPECIFICATIONS.

A–1. The following specifications, of the issue in effect on date of invitation for bids, form a part of this specification, and bidders and contractors should provide themselves with the necessary copies:

Navy Department General Specifications for Inspection of Material.

Federal Specification ZZ–R–601—Rubber Goods; General Specifications (Methods of Physical Tests and Chemical Analyses).

B. TYPES.

B–1. Rubber cement shall be of the following types, as specified:

Type A—Self-curing cement.
Type B—Air-drying cement.

C. MATERIAL AND WORKMANSHIP.

C–1. *Rubber.*—The rubber compound shall be made from the best quality washed and air-dried plantation or up-river fine hard Para rubber. Suitable compounding materials shall be added to the rubber in amounts just sufficient to insure that the resulting cement shall have the requisite tackiness, strength, stretch, adhesion, and aging and working qualities for satisfactory use.

C–2. *Solvents.*—The solvent used in the preparation of cement shall be benzol or solvent naphtha. Benzol shall be high grade, clear, colorless, and water-free, and shall have an initial boiling point not lower than 75° C. and a dry point not greater than 82° C. Solvent naphtha shall be clear, colorless, and water-free, and shall have an initial boiling point not lower than 40° C. and a dry point not greater that 145° C., with 98 percent of the solvent recovered. The use of other high-grade solvents will be permitted, provided they are equally suitable for the purpose and are no more toxic than benzol or naphtha and are not injurious to cloth.

C–3. *Workmanship.*—Rubber cement shall be prepared in accordance with high grade commercial manufacturing practice covering this class of work.

D. GENERAL REQUIREMENTS.

D–1. *Preparation.*—The rubber compound shall be milled and cut in the solvent according to best commercial practice. Care shall be

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taken to break down the rubber only to the point where the compound is well mixed with the rubber and where the requisite amount of tackiness is obtained. The selection of hard rubber and care to prevent overmilling are emphasized.

D–2. *Fineness.*—Cement shall be strained through a sieve having not less than 80 meshes per inch.

D–3. *Aging.*—Cement shall not become stringy, and the compound shall not settle if the cement is allowed to stand in a covered receptacle for 3 months previous to use.

D–4. *Performance.*—Seams fabricated with this cement shall remain flexible and shall not harden, soften, or separate when exposed to reasonable temperatures and conditions of service.

D–5. *Instructions.*—Instructions shall be pasted on all cement containers covering the recommended use of the cement and precautions necessary for proper storage. In the case of self-curing cement, the instructions shall cover completely and thoroughly the method of mixing, period of time after mixing during which cement may be used, and other pertinent information and directions.

E. DETAIL REQUIREMENTS.

E–1. *Type A, self-curing cement.*—

E–1a. *Seam strength.*—Seams prepared with self-curing cement shall withstand, without separating, a dead load of 40 pounds per inch width of seam for 24 hours at a temperature of 135° (±3°) F.

E–1b. *Storage.*—Self-curing cement, while stored in the unmixed state, shall not become cured.

E–2. *Type B, air-drying cement.*—

E–2a. *Seam strength.*—Seams prepared with air-drying cement shall withstand, without separating, a dead load of 30 pounds per inch width of seam for 24 hours at a temperature of 118° (±2°) F.

F. METHODS OF SAMPLING, INSPECTION, AND TESTS.

F–1. *Sampling.*—Cement furnished under this specification shall meet the tests specified at any time during a 3-month period subsequent to receipt at destination. Cement shall also be subjected to tests at weekly intervals during its use in fabrication of articles for delivery to the Navy Department.

F–2. *Seam strength.*—Rubberized fabric having a sufficient margin of strength to withstand the specified load and heat for the required time without failure shall be used for the construction of seams for test. The plies of fabric shall be lapped ¾ inch, the rubberized surfaces being buffed for a distance of ¼ to ½ inch beyond the lap and the buffed surfaces washed thoroughly with a solvent as specified in paragraph C–2 to remove sulphur bloom and soapstone. Seams shall be prepared with the filling threads parallel to the contact edges so that the tension during test will be applied to the warp threads. Cement shall be thoroughly mixed before using and care shall be taken to prevent unnecessary evaporation. Cementing in the open and on wet days and in sunlight shall be avoided. Cement shall be applied to the surfaces in the consistency and with the proper time interval as shall be advisable under existing atmospheric conditions. The coats shall be brushed well into the fabric. After the last coat has

been applied and the proper degree of tackiness reached, the pieces shall be laid together and well rolled out to exclude all air bubbles. Seams shall be neither sewed nor taped and shall not be subjected to any cure other than that which may occur as part of the natural aging of the cement. Seams shall be allowed to age at least 10 days before testing. The prepared seams shall be cut into strips 2 inches wide and of sufficient length for testing. The specified load shall be applied and the specimen continuously exposed to the required condition for the duration of test.

G. PACKAGING, PACKING, AND MARKING FOR SHIPMENT.

G–1. *Packaging.*—Cement shall be furnished in 4-ounce, 1-quart, 1-gallon, or other size containers which may be specifically prescribed. Type B cement may be ordered in drums for special purposes.

G–2. *Packing.*—Containers shall be packed in substantial wooden boxes, so constructed as to insure acceptance by common or other carriers, for safe transportation at the lowest rate to the point of delivery. The packing shall comply with Interstate Commerce Commission "Regulations for Transportation by Rail of Explosives and other Dangerous Articles in Freight, Express, and Baggage Services."

G–3. *Marking.*—

G–3a. *Containers.*—Containers and drums shall be marked with the name of the material, the type, the quantity contained therein, the date of manufacture, the number of the contract or order, and the manufacturer's name or trade mark.

G–3b. *Shipping containers.*—Shipping containers shall be marked with the name of the material, the type, and the quantity contained therein, as defined by the contract or order under which shipment is made, the name of the contractor, and the number of the contract or order. Shipping containers shall also be marked in conformity with Interstate Commerce Commission "Regulations for Transportation by Rail of Explosives and Other Dangerous Articles in Freight, Express, and Baggage Services."

H. NOTES.

H–1. Rubber cement is intended for use in cementing seams, constructing and attaching patches and fabric and rubber accessories in the manufacture of airships, balloons, flotation bags, and pneumatic life rafts. Type B, air-drying cement, is intended primarily for use by service units.

H–2. Copies of Navy Department specifications and any other specifications forming a part thereof may be obtained upon application to the Bureau of Supplies and Accounts, Navy Department, Washington, D. C., except that Naval activities should make application to the Commandant, Navy Yard, New York, N. Y. When requesting, refer to specification by both title and number (or symbol).

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